THAT WHICH IS CLAIMED IS:

1. An isolated nucleic acid encoding a chimeric polypeptide comprising a secretory signal sequence operably linked to a lysosomal polypeptide.

2. The isolated nucleic acid of Claim 1, wherein said secretory signal sequence is derived from a secreted polypeptide.

3. The isolated nucleic acid of Claim 2, wherein said secretory signal sequence is derived from erythropoietin, Factor IX, prealbumin or α1-antitrypsin precursor polypeptide.

4. The isolated nucleic acid of Claim 1, wherein said secretory signal sequence comprises the amino acid sequence of SEQ ID NO:5.

5. The isolated nucleic acid of Claim 1, wherein said isolated nucleic acid is operatively linked to a transcriptional control element operable in liver cells.

6. The isolated nucleic acid of Claim 1, wherein said lysosomal polypeptide is a lysosomal acid α-glucosidase (GAA) polypeptide.

7. The isolated nucleic acid of Claim 6, wherein said GAA polypeptide is a human GAA polypeptide.

8. The isolated nucleic acid of Claim 6, wherein said isolated nucleic acid further comprises a 3' untranslated region.

9. The isolated nucleic acid of Claim 8, wherein:

(a) said 3' untranslated region comprises a deletion therein; or

(b) wherein said 3' untranslated region is less than 200 nucleotides in length and comprises a segment that is heterologous to said GAA coding region.

10. The isolated nucleic acid of Claim 1, wherein the isolated nucleic acid is 4 kilobases or less in length.

11. A vector comprising the isolated nucleic acid of Claim 1.

12. The vector of Claim 11, wherein said vector is an adeno-associated virus (AAV) vector.

13. The vector of Claim 11, wherein said lysosomal polypeptide is a GAA polypeptide.

14. A pharmaceutical formulation comprising the isolated nucleic acid of Claim 1 in a pharmaceutically acceptable carrier.

15. The pharmaceutical formulation of Claim 14, wherein said pharmaceutical formulation comprises a vector comprising the isolated nucleic acid.

16. The pharmaceutical formulation of Claim 15, wherein said vector is an adeno-associated virus (AAV) vector.

17. The pharmaceutical formulation of Claim 14, wherein said lysosomal polypeptide is a GAA polypeptide.

18. A cell comprising the isolated nucleic acid of Claim 1.

19. A chimeric polypeptide comprising a secretory signal sequence operably linked to a lysosomal polypeptide.

20. The chimeric polypeptide of Claim 19, wherein said lysosomal polypeptide is an acid α-glucosidase (GAA) polypeptide.

21. A method of delivering a nucleic acid encoding a lysosomal polypeptide to a cell, comprising contacting a cell with an isolated nucleic acid according to Claim 1 under conditions sufficient for the isolated nucleic acid to be introduced into the cell, expressed to produce the chimeric polypeptide comprising the secretory signal sequence operably linked to the lysosomal polypeptide, and the lysosomal polypeptide secreted from the cell.

22. The method of Claim 21, wherein the cell is contacted with a vector comprising the isolated nucleic acid.

23. The method of Claim 21, wherein said lysosomal polypeptide is a lysosomal acid α-glucosidase (GAA) polypeptide.

24. The method of Claim 21, wherein the cell is a cultured cell.

25. The method of Claim 21, wherein the cell is a cell *in vivo*.

26. A method of producing a lysosomal acid α-glucosidase (GAA) polypeptide in a cultured cell, comprising:

contacting a cultured cell with an isolated nucleic acid according to Claim 6 under conditions sufficient for the isolated nucleic acid to be introduced into the cultured cell, expressed to produce the chimeric polypeptide comprising the secretory signal sequence operably linked to the GAA polypeptide, and the GAA polypeptide secreted from the cultured cell, and

collecting the GAA polypeptide secreted into the cell culture medium.

27. The method of Claim 26, wherein the cell is a mammalian cell.

28. The method of Claim 27, wherein the cell is a CHO cell, a 293 cell, a HT1080 cell, a HeLa cell or a C10 cell.

29. The method of Claim 26, wherein the cell is contacted with a vector comprising the isolated nucleic acid.

30. A method of treating a deficiency of a lysosomal polypeptide in a subject, comprising administering to the subject a cell according to Claim 18 in a pharmaceutically acceptable carrier in a therapeutically effective amount.

31. A method of treating a deficiency of a lysosomal polypeptide in a subject, comprising administering to the subject the pharmaceutical formulation of Claim 14 in a therapeutically effective amount.

32. The method of Claim 31, wherein the pharmaceutical formulation comprises a vector comprising the isolated nucleic acid.

33. The method of Claim 31, wherein the isolated nucleic acid encoding the chimeric polypeptide is delivered to the liver.

34. A method of treating a deficiency of a lysosomal polypeptide in a subject, comprising administering to the subject the pharmaceutical formulation of Claim 17 in a therapeutically effective amount.

35. The method of Claim 34, wherein the pharmaceutical formulation comprises a vector comprising the isolated nucleic acid.

36. The method of Claim 34, wherein the isolated nucleic acid encoding the chimeric polypeptide is delivered to the liver.

37. The method of Claim 36, wherein the GAA polypeptide is secreted from the liver and there is uptake of the secreted GAA polypeptide by skeletal muscle tissue, cardiac muscle tissue, diaphragm muscle tissue or a combination thereof, wherein uptake of the secreted GAA polypeptide results in a reduction in lysosomal glycogen stores in the tissue(s).

38. An isolated nucleic acid encoding a lysosomal acid α-glucosidase (GAA) polypeptide, said isolated nucleic acid comprising:

(a) a coding region encoding a GAA polypeptide, and

(b) a 3' untranslated region,

(i) wherein said 3' untranslated region comprises a GAA 3' untranslated region comprising a deletion of at least 25 consecutive nucleotides, so that upon introduction into a cell, GAA polypeptide is produced at a higher level from said isolated nucleic acid as compared with GAA polypeptide production from an isolated nucleic acid comprising a full-length GAA 3' untranslated region, or

(ii) wherein said 3' untranslated region is less than 200 nucleotides in length and comprises a segment that is heterologous to said GAA coding region, so that upon introduction into a cell, GAA polypeptide is produced at a higher level from said isolated nucleic acid as compared with GAA polypeptide production from an isolated nucleic acid comprising a full-length GAA 3' untranslated region.

39. The isolated nucleic acid of Claim 38, wherein said 3' untranslated region comprises the deletion of subparagraph (i).

40. The isolated nucleic acid of Claim 39, wherein said deletion in said 3' untranslated region comprises a deletion of at least 100 bases.

41. The isolated nucleic acid of Claim 39, wherein at least 50% of said 3' untranslated region has been deleted.

42. The isolated nucleic acid of Claim 39, wherein said 3' untranslated region is 200 nucleotides in length or less.

43. The isolated nucleic acid of Claim 42, wherein essentially all of said 3' untranslated region has been deleted.

44. The isolated nucleic acid of Claim 39, wherein said 3' untranslated region comprises a deleted form of the 3' untranslated region at nucleotides 3301 to 3846 of SEQ ID NO:1.

45. The isolated nucleic acid of Claim 44, wherein said 3' untranslated region comprises nucleotides 2878 to 3012 of SEQ ID NO:3.

46. The isolated nucleic acid of Claim 39, wherein said isolated nucleic acid comprises SEQ ID NO:3.

47. The isolated nucleic acid of Claim 38, wherein said GAA polypeptide is a human GAA polypeptide.

48. The isolated nucleic acid of Claim 38, wherein said isolated nucleic acid is operatively linked to a transcriptional control element that is operable in liver cells.

49. The isolated nucleic acid of Claim 38, wherein said isolated nucleic acid is 4 kilobases or less in length.

50. A vector comprising the isolated nucleic acid of Claim 38.

51. The vector of Claim 50, wherein said vector is an adeno-associated virus (AAV) vector.

52. A pharmaceutical formulation comprising the isolated nucleic acid of Claim 38 in a pharmaceutically acceptable carrier.

53. The pharmaceutical formulation of Claim 52, wherein said pharmaceutical formulation comprises a vector comprising the isolated nucleic acid.

54. A cell comprising the isolated nucleic acid of Claim 38.

55. A method of delivering a nucleic acid encoding a lysosomal acid α-glucosidase (GAA) polypeptide to a cell, comprising contacting a cell with the isolated nucleic acid according to Claim 38 under conditions sufficient for the isolated nucleic acid encoding the GAA polypeptide to be introduced into the cell and expressed to produce the GAA polypeptide.

56. The method of Claim 55, wherein the cell is contacted with a vector comprising the isolated nucleic acid encoding the GAA polypeptide.

57. The method of Claim 56, wherein the vector is an adeno-associated virus (AAV) vector.

58. The method of Claim 55, wherein the cell is a cultured cell.

59. A method of producing lysosomal acid α-glucosidase (GAA) polypeptide in a cultured cell, comprising:

contacting a cultured cell with an isolated nucleic acid according to Claim 38 under conditions sufficient for the isolated nucleic acid to be introduced into the cultured cell and expressed to produce the GAA polypeptide, and

collecting the GAA polypeptide.

60. The method of Claim 59, wherein the GAA polypeptide is secreted into the cell culture medium and collected therefrom.

61. The method of Claim 59, wherein the cell is a mammalian cell.

62. The method of Claim 62, wherein the cell is a CHO cell, a 293 cell, a HT1080 cell, a HeLa cell or a C10 cell.

63. The method of Claim 59, wherein the cell is contacted with a vector comprising the isolated nucleic acid.

64. The method of Claim 63, wherein the vector is an adeno-associated virus (AAV) vector.

65. A method of treating lysosomal acid α-glucosidase (GAA) deficiency in a subject, comprising administering to the subject a cell according to Claim 54 in a pharmaceutically acceptable carrier in a therapeutically effective amount.

66. A method of treating lysosomal acid α-glucosidase (GAA) deficiency in a subject, comprising administering to the subject the pharmaceutical formulation of Claim 52 in a therapeutically effective amount.

67. The method of Claim 66, wherein the subject is a human subject.

68. The method of Claim 66, wherein the isolated nucleic acid encoding GAA is delivered to the liver.

69. The method of Claim 68, wherein the GAA polypeptide is secreted from the liver into the systemic circulation.

70. The method of Claim 69, wherein there is uptake of the secreted GAA polypeptide by skeletal muscle tissue, cardiac muscle tissue, diaphragm muscle tissue or a combination thereof, wherein uptake of the secreted GAA polypeptide results in a reduction in lysosomal glycogen stores in the tissue(s).

71. The method of Claim 66, wherein the pharmaceutical formulation comprises a vector comprising the isolated nucleic acid encoding the GAA polypeptide.

72. The method of Claim 71, wherein the vector is an adeno-associated virus (AAV) vector.